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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,383	01/05/2001	Bruce M. Schena	IMM029B	6408

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EXAMINER

LEWIS, DAVID LEE

ART UNIT PAPER NUMBER

2673

DATE MAILED: 05/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

S4

Office Action Summary	Application No. 09/755,383	Applicant(s) Schena et al.
	Examiner David L Lewis	Art Unit 2673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on May 6, 2002
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle* 1035 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 47-76 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 47-76 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

- 14) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s). 4
- 4) Interview Summary (PTO-413) Paper No(s). _____
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____

Title: Force Feedback Interface Device With Touchpad Sensor

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
2. **Claims 47-50, 52, 54, 56-60, 71-73, and 75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hannaford et al. (5642469).**
3. **As in claim 47, 60, and 71, Hannaford et al. teaches of a user interface device engaged by a user for controlling a graphical cursor displayed by a host computer in communication with said user interface device, and for providing tactile feedback, column 1 lines 10-15, said user interface device comprising: a planar touchpad sensor able to detect planar user motion in an x-y plane, said touchpad sensor also able to detect a degree of force or pressure applied to said touchpad sensor by said user in a z-direction, column 4 lines 1-5, column 5 lines 25-35; and at least one actuator operative to provide tactile sensations to said user, said at least one actuator controlled by software to generate**

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said tactile sensations, **column 2 lines 1-23, column 2 lines 11-17**, said software controlling said actuator as a function of a position of said cursor displayed by said host computer, and said software controlling said actuator also as a function of said detected degree of force or pressure applied to said touchpad sensor in said z-direction, **column 1 lines 25-34, column 2 lines 39-47**. Wherein while Hannaford is silent as to mentioning a graphical cursor, said feature would have been obvious to the skilled artisan given Nannaford's teaching of the manipulation of a control point within the workspace domain of a virtual reality application, further wherein a control algorithm determines depending on the position of the control point and force applied by the operator, what sensation the operator experiences via the tactile feedback. Said control point obviously inclusive to representation of a graphical cursor with the confines of said virtual reality application.

4. **As in claim 48 and 72, Hannaford teaches** wherein said software increases the magnitude of said tactile sensations in response to increases in the detected degree of force or pressure, column 2 lines 20-25, wherein the existence of said software is inherent given the virtual reality application and control algorithm, which require software to implement. **As in claim 49 and 73**, Hannaford teaches wherein said tactile sensations simulate a sense of friction for the user, column 2 lines 15-20. **As in claim 50**, Hannaford teaches wherein said tactile sensations are associated with a simulated pen-tip drawing graphical objects or shapes upon a graphical display, column 3 lines 11-15. **As in claim 52**, Hannaford teaches wherein said tactile sensations are texture sensations, column 2 lines 16-18. **As**

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in claim 54 and 75, Hannaford teaches wherein said tactile sensations are deactivated when the user is not engaging said user interface with pressure above a predetermined threshold, column 2 lines 20-24. As in claim 56, Hannaford teaches wherein said touchpad sensor senses a location of contact with a pointer member having movement controlled by said user, column 1 lines 15-31, column 3 lines 11-16. As in claim 57, Hannaford teaches further comprising a linkage mechanism coupling a user manipulatable object to said actuator, wherein said linkage mechanism allows said user motion of said user object in said x-y plane, column 3 lines 11-16, column 2 lines 38-48, figures 4 and 5. As in claim 58, Hannaford teaches wherein said user manipulatable object is one of a mouse and a stylus, column 3 lines 10-16, further wherein it would have been obvious to the skilled artisan that a mouse is a well known substitute input device for said pen-like tool or stylus. As in claim 59, Hannaford teaches of wherein said touchpad sensor includes a planar photo diode, column 4 lines 42-67, wherein photo diodes are well known encoder means for input devices with three degrees of freedom.

5. **Claims 51, 53, 55, 61-70, 74, and 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hannaford et al. (5642469) in view of Zilles et al. (6111577).**
6. **As in claims 51, 53, 55, 61-70, 74, and 76 Hannaford et al. teaches of said invention as applied to claims 47, 60, and 71, however Hannaford is silent as to said computer and processor details, said damping, said function of velocity, texture, and indexing. Zilles et al teaches of a tactile force**

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feedback manipulator devices with three degrees of freedom as describe by Hannaford, however Zilles et al in not silent on said computer and processor details and other features, **figure 15, column 18 lines 43-55**, wherein the computer and processor details of Hannaford are well known as suggested by Zilles. **As in claim 61**, Zilles teaches of further comprising a control processor separate from said host computer, said control processor controlling said at least one actuator to output said tactile sensations, and wherein data derived from said degree of force or pressure applied to said touchpad sensor is used by said control processor, at least in part, to control said tactile sensations, column 18 lines 43-55. **As in claim 62-67**, Zilles teaches of said damping, friction, and texture sensations, column 7 lines 7-17, column 17 lines 1-13. **As in claims 51, 53, and 74**, Zilles teaches of said control as a function of velocity, column 7 lines 5-25. **As in claims 68 and 69**, Hannaford in view of Zilles teaches of said stylus and mouse for the same reasons of obviousness as applied to claim 58, in view of said three degrees of freedom. **As in claim 70**, Hannaford in view of Zilles teaches of wherein said control processor limits said force output from said at least one actuator when said detected degree of force or pressure is below a predetermined threshold force, column 2 lines 7-45. **As in claims 55 and 76**, said indexing based on force in the z direction is well known in the art of input devices with three degrees of freedom as taught by both Hannaford and Zilles.

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Claim Objections

7. Claims 41-76 and in particular claims 47, 60, and 71 are objected to because of the following informalities: “touchpad sensor” terminology does not appear to be supported by the specification, wherein this term “touchpad sensor” does not seem to be found in the specification or supported by the drawings in relation to figure 8. Further, “touchpad” a term well known in the art and related to static or non moving touch surfaces appears to be used outside of the well known context, wherein while the applicant’s touch surface happens to be a pad that you touch for the purpose of manipulating cursor input, **this term is confusing within the context of the association this term has in the art.** The applicant’s “touchpad” operates more like a joystick or mouse rather than the “well know” stationary “touchpad”, and therefore “well known” associated “touchpad sensor”. What the applicant is trying to identify as a “touchpad sensor” is confusing. Appropriate correction is required.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hilton (5591924), column 4 lines 19-28, discuss the indexing function well known in the art. Pryor teaches of a tactile force feedback touchpad device with three degrees of freedom.

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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **David L. Lewis** whose telephone number is **(703) 306-3026**. The examiner can normally be reached on MT and THF from 8 to 5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala, can be reached on (703) 305-4938. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.



BIPIN SHALWALA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600